

REMARKS

Claims 46-53, 56-65, and 68-69 are currently pending. Claims 46 and 58 have been amended and claims 54-55 and 66-67 were cancelled.

The Examiner rejected claims 46, 48, 50, 53, 56-58, 60, 62, 65, and 68-69 under 35 U.S.C. §102(b) as being anticipated by Cousimano (U.S. Patent No. 4,302,935).

Amended claim 46 recites a tube configured to attach to an engine housing and to guide a fluid from an inlet to an outlet. The tube includes a first component that has an interior and a bend portion. The bend portion has a curved outer bend surface adjacent the interior and has a first inner bend surface adjacent the interior that has a sharp corner opposite the outer bend surface and spaced away from the inlet and the outlet. A second component is positioned adjacent the sharp corner and includes a curved surface that has a second inner bend surface. The second inner bend surface and the outer bend surface cooperate to guide all of the fluid flow through the bend portion.

Cousimano does not teach or suggest, among other things, a tube that includes a first component that has a bend portion that includes a curved outer bend surface adjacent an interior and a first inner bend surface adjacent the interior that has a substantially sharp corner opposite the outer bend surface and spaced away from the inlet and the outlet. In addition, Cousimano does not teach or suggest a second component positioned adjacent the sharp corner and including a curved surface that includes a second inner bend surface arranged such that the outer bend surface and the second inner bend surface cooperate to guide all of the fluid flow through the bend portion.

Rather, Cousimano discloses a tube T and an insert A. The tube does include a bend that defines an outer bend surface and an inner bend surface. However, the inner bend surface does

not include a sharp corner opposite the outer bend surface and spaced away from the inlet and the outlet. The only sharp corner of the first component is the flange corner which is not disposed away from the inlet and the outlet, but rather makes up part of the inlet or the outlet. The Examiner argues that Cousimano teaches a sharp corner as the bend in Cousimano covers a 90-degree angle. While Cousimano does redirect the flow through an angle that is about 90-degrees, this is irrelevant to the claim. The claim states that a first inner bend surface adjacent the interior has a substantially sharp corner. Thus, the corner is formed as part of the first component and is not defined by the angular change in direction of the flow in the tube.

Applicants have identified an example of a “sharp corner” in the specification. Specifically, Applicants state “Fig. 1 illustrates one prior art tube 1 in section. As can be seen, the inner corner of the tube 2 is not radiused. This sharp corner creates turbulence and other flow losses that are undesirable.” *Specification, page 2, lines 10-12 (emphasis added).* Thus, it is clear what Applicants meant by the term “sharp corner,” and that the Examiner’s definition is improper. Additionally, it is clear that Cousimano does not teach or suggest a sharp corner as defined by Applicants and positioned as recited in claim 46.

Furthermore, the insert A, extends into a straight portion of tube T as is illustrated in Fig.

1. Fig. 1 shows a first line that represents the end of the tube and a second line, parallel to the first line and spaced from the first line. This second line appears to indicate the end of the bend portion and the start of a straight portion that extends from the bend portion to the end of the tube. This is confirmed by a close inspection of Fig. 4 which shows that the header plate B is a separate piece from the tube T and does not define part of the bend portion. The insert A stops at this line, as illustrated in Fig. 1. As such, the insert does not include a surface that cooperates

with the outer bend surface to guide fluid through the bend portion, as all of the fluid has passed the bend portion before the fluid reaches the insert A.

In light of the foregoing, Cousimano does not teach or suggest each and every limitation of claim 46. As such, claim 46 is allowable over Cousimano. In addition, claims 47-53 and 56-57 depend from claim 46 and are allowable over Cousimano.

Amended claim 58 recites a tube configured to attach to an engine housing and to guide a fluid along a tube interior from an inlet to an outlet. The tube includes a bend portion that has a curved outer bend surface adjacent the interior and a curved inner bend surface adjacent the interior. The tube includes a first component that defines the outer bend surface and a sharp corner opposite the outer bend surface, spaced away from the inlet and the outlet, and adjacent the interior. A second component is positioned adjacent the sharp corner and includes a curved surface that at least partially defines the curved inner bend surface. All of the fluid passes between the curved inner bend surface and the curved outer bend surface.

Cousimano does not teach or suggest a tube that includes a first component that defines the outer bend surface and a sharp corner opposite the outer bend surface, spaced away from the inlet and the outlet, and adjacent the interior. As discussed with regard to claim 46, the Examiner's argument is based on the incorrect determination that a change in the direction of flow of about 90-degrees constitutes a sharp corner. Applicants have pointed out the description of a "sharp corner" in the specification. *See Specification, page 2, lines 10-12.* Thus, Cousimano does not teach or suggest a sharp corner as defined by Applicants and positioned as recited in claim 58.

In light of the foregoing, Cousimano does not teach or suggest each and every limitation of claim 58. As such, claim 58 is allowable over Cousimano. In addition, claims 59-65 and 68-

69 depend from claim 58 and are allowable over Cousimano.

The Examiner rejected claims 46-50, 53, 56-62, 65, and 68-69 under 35 U.S.C. §102(b) as being anticipated by Reed (U.S. Patent No. 1,300,015).

Amended claim 46 recites a tube configured to attach to an engine housing and to guide a fluid from an inlet to an outlet. The tube includes a first component that has an interior and a bend portion. The bend portion has a curved outer bend surface adjacent the interior and has a first inner bend surface adjacent the interior that has a sharp corner opposite the outer bend surface and spaced away from the inlet and the outlet. A second component is positioned adjacent the sharp corner and includes a curved surface that has a second inner bend surface. The second inner bend surface and the outer bend surface cooperate to guide all of the fluid flow through the bend portion.

Reed does not teach or suggest, among other things, a tube that includes a first component having a curved outer bend surface adjacent the interior and a first inner bend surface adjacent the interior that has a substantially sharp corner, and a second component positioned adjacent the sharp corner and including a curved surface that has a second inner bend surface arranged such that the second inner bend surface and the outer bend surface cooperate to guide all of the fluid flow through the bend portion.

Rather, Reed discloses a mixer that includes a manifold 1 that makes a 90-degree bend before connecting to a valve chamber 2. A mixing device positioned within the manifold includes a ring 6 and a plurality of blades 7 (best illustrated in Fig.1) that induce a swirl in the fluid as it passes through the mixer. Reed does not teach or suggest positioning the mixer adjacent a sharp corner such that *all* of the flow is guided by an outer bend surface of the manifold and an inner bend surface of the mixer. Rather, the blades 7 of Reed are positioned

such that some flow can pass between the blade 7 and the inner bend surface (see flow area between blade 7 and the inner sharp corner illustrated in Fig. 3). In addition, given the arrangement of the mixer, some flow will always be directed between blades 7 such that it is isolated from one of the inner bend surface or the outer bend surface. Thus, some flow always passes through the device of Reed without being *guided* by the inner bend surface or the outer bend surface, and as such cannot be *guided* by both surfaces.

In light of the foregoing, Reed does not teach or suggest each and every limitation of claim 46. As such, claim 46 is allowable over Reed. In addition, claims 47-53 and 56-57 depend from claim 46 and are allowable over Reed.

Amended claim 58 recites a tube configured to attach to an engine housing and to guide a fluid along a tube interior from an inlet to an outlet. The tube includes a bend portion that has a curved outer bend surface adjacent the interior and a curved inner bend surface adjacent the interior. The tube includes a first component that defines the outer bend surface and a sharp corner opposite the outer bend surface, spaced away from the inlet and the outlet, and adjacent the interior. A second component is positioned adjacent the sharp corner and includes a curved surface that at least partially defines the curved inner bend surface. All of the fluid passes between the curved inner bend surface and the curved outer bend surface.

Reed does not teach or suggest a second component positioned adjacent a sharp corner and including a curved surface that at least partially defines the curved inner bend surface such that all of the fluid passes between the curved inner bend surface and the curved outer bend surface. Rather, Reed discloses a mixer positioned within a manifold. The mixer includes a plurality of blades 7 arranged as illustrated in Fig. 1. The blades 7 define four distinct flow paths through the mixer. No matter which of the blades 7 is designated as including the curved surface

that at least partially defines the curved inner bend surface, it would not be positioned such that all of the fluid passes between the curved inner bend surface and the curved outer bend surface. Some fluid always passes on both sides of each blade 7, such that while some fluid does flow between the curved inner bend surface and the curved outer bend surface, some flow must *not* pass between these two surfaces.

In light of the foregoing, Reed does not teach or suggest each and every limitation of claim 58. As such, claim 58 is allowable over Reed. In addition, claims 59-65 and 68-69 depend from claim 58 and are allowable over Reed.

The Examiner rejected claims 51-52 and 63-64 under 35 U.S.C. §103(a) as being unpatentable over Cousimano in view of Reed.

Claims 51-52 depend from claim 46 and claims 63-64 depend from claim 58. As discussed with regard to the 35 U.S.C. §102(b) rejections, neither Cousimano nor Reed teach or suggest each and every limitation of claims 46 or 58, much less those of claims 51-52 or 63-64.

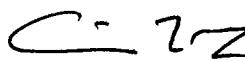
In light of the foregoing, Cousimano and Reed, alone or in combination do not teach or suggest each and every limitation of claims 46 or 58. As such, claim 46 and 58 are allowable. In addition, claims 51-52 and 63-64 depend from claims 46 and 58 and are also allowable.

CONCLUSION

In light of the foregoing, Applicants respectfully submit that claims 46-53, 56-65, and 68-69 are allowable.

The undersigned is available for telephone consultation during normal business hours.

Respectfully submitted,


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Docket No.: 018367-9805-00

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